

REMARKS

The Official Action mailed March 1, 2010, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on August 10, 2006, and June 2, 2009.

A further Information Disclosure Statement and Correction to Previously Submitted Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 1-17 were pending in the present application prior to the above amendment. Claims 1, 2, 4, 7, 8 and 10 have been canceled without prejudice or disclaimer, and claims 5, 6 and 11-16 have been amended to better recite the features of the present invention. Accordingly, claims 3, 5, 6, 9 and 11-17 are now pending in the present application, of which claims 3, 5, 6, 9, 11 and 12 are independent. Although Box 5 of the Office Action Summary indicates that claims 1-17 are allowed, the body of the Official Action appears to reject claims 1-17; therefore, it is understood that the Office Action Summary may include a typographical error and that, perhaps, claims 1-17 should have been included in Box 6, i.e. "claims 1-17 is/are rejected." Clarification in a future communication is respectfully requested. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 2 of the Official Action requests the Applicant's cooperation in correcting any errors of which the Applicant may become aware in the specification. In response, the specification has been amended to correct a minor typographical informality in the paragraph bridging pages 48 and 49. If the Examiner has any specific concerns regarding the specification, the Applicant respectfully requests that the Examiner bring them to the attention of the Applicant in a future communication. The

Applicant will correct any further errors in the specification of which the Applicant becomes aware.

Paragraph 5 of the Official Action rejects claims 1, 2, 4-8 and 10-17 as obvious based on the combination of U.S. Publication No. 2005/0084712 to Kido and Zhang et al., "Carbazole-based hole-transporting materials for electroluminescent devices," Synthetic Metals, Vol. 137, pp. 1111-1112, January 1, 2003. Claims 1, 2, 4, 7, 8 and 10 have been canceled without prejudice or disclaimer; therefore, the above-referenced rejections of these claims are now moot. With respect to independent claims 5, 6, 11 and 12, the Applicant respectfully submits that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2144.04, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 5, 6, 11 and 12

have been amended to recite that a second or third layer which is in contact with the second electrode and is located between the second electrode and the first layer, which is supported in the present specification, for example, by Figure 2. For the reasons provided below, Kido and Zhang, either alone or in combination, do not teach or suggest the above-referenced features of the present invention.

Kido discloses the following (paragraph [0024]):

... This EL device is characterized in that two or more light-emissive units, which correspond to a portion of the layers sandwiched by the cathode electrode layer and the anode electrode layer in the prior art devices, are partitioned with a layer called a "charge-generation layer", and the charge-generation layer can act as a layer for generating holes and electrons during application of the voltage ...

Specifically, Kido discloses the following (paragraph [0121]):

... the EL device may have the layer structure that two or more light-emissive units (a layered portion sandwiched between the cathode electrode layer and the anode electrode layer; when the EL device includes a layer structure of, for example, "(anode)/hole injection layer/hole transportation layer/light-emissive layer/electron injection layer/(cathode)", the "hole injection layer/hole transportation layer/light-emissive layer/electron injection layer" corresponds to the "light-emissive unit") are partitioned with a charge-generation layer. In this layer structure, the charge-generation layer can act as a hole-generating layer and an electron-generating layer during application of voltage ...

From these disclosures, the Applicant believes that Kido may teach a layer structure as follows: (anode) / first hole injection layer / first hole transportation layer / first light-emissive layer / first electron injection layer / charge-generation layer / second hole injection layer / second hole transportation layer / second light-emissive layer / second electron injection layer / (cathode). In this layer structure, the first hole injection layer and the second hole injection layer may include a mixed layer of a metal oxide and an organic compound. Even if one were to regard the claimed second layer as corresponding to the second hole injection layer, the claimed first layer as

corresponding to the first light-emissive layer, and the claimed second electrode as corresponding to the cathode, the layer structure in which the second hole injection layer is in contact with the cathode cannot be obtained. As such, Kido does not teach or suggest that a second or third layer which is in contact with the second electrode and is located between the second electrode and the first layer.

In addition, the Official Action asserts that "[the] nature of the mixed layer is such that it can play the role of a charge-generating layer: it can be an electron-injecting layer or hole-injecting layer, depending on its position relative to the light-emitting layer [0025]" and that "[the] prior art clearly suggests embodiments where an LE device has two of such mixed layers disposed on both sides of a light-emitting layer" (Paper No. 20091124, page 3). The Applicant respectfully traverses the apparent assertion of the Official Action that the charge-generating layer corresponds with a hole-injecting layer that includes a mixed layer of a metal oxide and an organic compound. Specifically, the Applicant notes that "the hole injection layer" constituting a part of the light-emissive unit and "the charge-generation layer" partitioning the light-emissive units are separate and discrete components. Further, while Kido appears to disclose that the "charge-generation layer" of Kido *may* act as a hole-generating layer and an electron-generating layer, it is respectfully submitted that Kido is silent about the details of the charge-generation, such as the material used therein. It is further submitted that Kido only discloses that "the hole injection layer includes a mixed layer of a metal oxide and an organic compound" (Abstract of Kido). Therefore, it is respectfully submitted that Kido does not teach or suggest that the charge-generating layer corresponds to the hole injection layer, including a mixed layer of a metal oxide and an organic compound.

Furthermore, the Applicant respectfully submits that Zhang does not cure the deficiencies in Kido. The Official Action asserts that "Zhang ... discloses carbazole derivatives that are used as hole-transporting materials" (Paper No. 20091124, page 4). However, it is respectfully submitted that Kido and Zhang do not teach or suggest that a second or third layer which is in contact with the second electrode and is located

between the second electrode and the first layer. It is further submitted that Zhang does cure the above-mentioned deficiencies of Kido with respect to the charge-generating layer. Since Kido and Zhang do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Paragraph 10 of the Official Action rejects claims 1-4, 7-10 and 13-17 as obvious based on the combination of U.S. Publication No. 2005/0116633 to Yamazaki and Zhang. In order to overcome this rejection, a verified English translation of priority application JP 2004-347903 filed November 30, 2004, will be filed as soon as it is complete and received from Japan. Since Yamazaki '633 has a U.S. filing date of November 23, 2004, Yamazaki '633 is only potentially available as prior art under 35 U.S.C. § 102(e). However, Yamazaki '633, as a commonly owned reference under § 102(e), may not be considered for a rejection under § 103. Subject matter developed by another, which qualifies as prior art only under one or more of subsections 35 U.S.C. §§ 102(e), (f) and (g), is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. § 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made. See MPEP § 2146. Since the disclosure by Yamazaki '633 and the claimed invention of the present application were, at the time the invention was made, subject to an obligation of assignment to Semiconductor Energy Laboratory Co., Ltd., Yamazaki '633 may not be considered for a rejection under § 103. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized to charge fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(a), 1.20(b), 1.20(c), and 1.20(d) (except the Issue Fee) which may be required now or hereafter, or credit any overpayment to Deposit Account No. 50-2280.

Respectfully submitted,



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